NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
Underground Injection Control Program

FACT SHEET
(Pursuant to NAC 445A.874)

Project Name: Peppermill Hotel Casino, Reno
Permittee Name: Nevada Properties
d.b.a. Peppermill Hotel Casino
2707 South Virginia Street
Reno, Nevada 89502
Permit Number: UNEV87064
Permit Action: Permit Renewal

A. Description of Injection

Location

Two injection wells, one for geothermal fluid disposal (IW-4) and one for dewatering disposal (IW-5), located at the Peppermill Hotel Casino, within the SW ¼ of Section 24, T 19N, R 19E, Reno, Washoe County, Nevada.

IW-4		IW-5	
Latitude:	39° 29' 48"N	Latitude:	39° 29' 51"N
Longitude:	119° 47' 53"W	Longitude:	119° 47' 58"W

Well Name	Type of Construct.	Total Depth	Screen Interval	Max. WH Pressure
IW- 4	Deep geothermal injection well	3307 feet	2600'-2700', 2800' - 3000', 3050' – 3300'	780 psig
IW-5	Vertical well – steel casing	100 feet	61.5' to 100'	40 psig

Characteristics

Geothermal injection well – IW-4 - Injectate water is spent geothermal fluid produced from two production wells and that is passed through a heat exchanger for the purpose of space and water heating. Produced water has average TDS concentrations of 690 mg/L, and does not meet Nevada drinking water quality standards for arsenic, with concentrations of 0.15 mg/L.

Dewatering injection well – IW-5 - Injectate water is generated by ground water dewatering below the hotel tower. Dewatering fluid quality has an average TDS concentration of 465 mg/L, and does not meet Nevada drinking water quality standards for arsenic, with concentrations of 0.027mg/L.

B. Synopsis

Feb. 2006: Draft Permit Renewal with no changes.
June 1997: Permit Renewed, IW-5 added to permit to inject groundwater intercepted by hotel tower.
July 1993: Permit Renewed with no changes.
May 1988: Original Permit Issued.

Geothermal injection well – IW-4 - The applicant seeks to renew permit UNEV87064. The existing permit allows for injection of geothermal fluids (used to provide space heating) into IW-4 at the Peppermill Hotel Casino located within the Moana Geothermal Area in southwest Reno. Production is from a geothermal aquifer at a depth of approximately 750 feet below the surface. The heating system consists of two production wells, a heat exchanger unit and one injection well. Water is produced from two production wells, pumped

through a heating system at an average rate of about 150 gpm and injected into the 3307 foot deep injection well under 125 to 150 psi pressure. The injection zone is between 2500 and 3500 feet below ground surface (bgs). The well passed a test for mechanical integrity in February 1998 and in March 2004. The well was originally permitted for injection by the Division in May 1988. Results of the March 2004 MIT show no shallow leakage, and injection occurring at the following intervals: 3220'-3224', 3252'-3255' and 3286'-3300'.

Dewatering injection system - IW-5 - This injection well was added to the permit as a modification in June 1997. It is designed to dispose of water from a dewatering system/sump in the basement area of the hotel tower on an as-needed basis. The water that collects in the sump comes from a horizontal drainage network below the hotel tower at a depth of 20 feet below ground surface (bgs). IW-5 is 100 feet in depth with blank casing to 61 feet, and screened to 100 feet bgs. The soil formation consists of poorly sorted, poorly bedded, thinly interbedded and interlensed clays, silt, sands and gravel. A flow rate of 350 gpm on a 30-day average dewatering fluid is discharged under gravity-fed conditions. The tower under slab dewatering system consists of perforated collection pipes located approximately one (1) foot below the basement floor slab. A Goulds 5 hp submersible pump with a 2 hp backup is installed in the sump. A 4-inch line conveys water from the sump to the injection well.

2006 Renewal Note: The dewatering system that discharges to IW-5 has been offline for a number of years, and it is not anticipated that it will need to be operated in the near future. No injection has occurred at this well since 1999. The sampling requirements for well IW-5 will be suspended until the system begins to operate. The Permittee will be required to notify the Division within five (5) business days of system operation, and resume monitoring requirements.

Area of Review: There are no drinking water wells within a one mile radius of the injection well. The nearest drinking water well, the Truckee Meadows Water Authority (TMWA) Corbett production well, is located approximately 1 1/3 miles to the northeast, and down gradient from the injection well. Washoe County maintains several golf course irrigation wells about one mile west/southwest of the injection well, and up gradient. Washoe County also maintains a shallow (less than 300 feet) well near Virginia Lake, north of the injection well. This County well is used for emergency irrigation purposes only, during times of drought, and is not used for drinking water supply.

C. Receiving Water Characteristics

IW-4: Geothermal injection well - Groundwater in the area of review has historically flowed in a northeasterly direction with an average hydraulic gradient of 0.03 (Flynn and Ghsun, 1984, *Geologic and hydrologic research on the Moana geothermal system Washoe, County, Nevada: Final Report prepared under USDOE Contract No. ACOE-82RA50075.)* Groundwater pumped from the Moana Geothermal area has been documented as having elevated concentrations of arsenic, boron and fluoride (Ibid.). Chemical analyses indicate that the receiving water is of poorer quality than injectate water, with background levels of arsenic exceeding drinking water standards at 0.19 mg/L.

IW-5: Dewatering injection well – Chemical analyses indicate that the receiving water is chemically similar to injectate water. Drinking water standards for arsenic are exceeded in the receiving water, with background levels of 0.021 mg/L.

D. Procedures for Public Comment

The Notice of the Division's intent to reissue a permit authorizing the facility to discharge to the ground water of the State of Nevada is being sent to the *Reno Gazette-Journal* for publication no later than March 7, 2006. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. All written comments received

during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. Proposed Determination

The Division has made the tentative determination to renew the proposed permit.

F. Proposed Effluent Limitations and Special Conditions

Effluents shall be limited by the Permittee as specified below:

a. The injection pressure shall not exceed 780 psig and 40 psig measured at the wellheads of IW-4 and IW-5, respectively, as calculated per NAC 445A.911.2. At no time shall injection pressures or the rate of injection be such that breakthrough or surfacing of injection fluids occurs. If breakthrough occurs, injection shall cease immediately into well(s) directly related to breakthrough.

b. The injection rate shall not exceed 1200 gpm into IW-4, and 400 gpm into IW-5.

Samples of fluid discharged to the following wells shall be collected and analyzed for the following parameters at the described frequencies:

PARAMETER	LOCATION(S)	FREQUENCY	LIMITATIONS
Total Dissolved Solids, mg/L	IW-4 and IW-5*	Semi-annually, taken in April and October	Monitor and Report
Electrical Conductivity, µmhos/cm	IW-4 and IW-5*	Semi-annually, taken in April and October	Monitor and Report
pH, standard units, (abbrev. S.U.)	IW-4 and IW-5*	Semi-annually, taken in April and October	Monitor and Report
Arsenic, mg/L	IW-4 and IW-5*	Semi-annually, taken in April and October	Monitor and Report
Sulfate, mg/L	IW-4	Semi-annually, taken in April and October	Monitor and Report
Volatile Organic Chemicals by EPA Method 8260B	IW-5*	Semi-annually, taken in April and October	Monitor and Report
Nitrate as N and Total Nitrogen, mg/L	IW-5*	Semi-annually, taken in April and October	Monitor and Report
Fecal coliform, CFU/100mL	IW-5*	Semi-annually, taken in April and October	Monitor and Report
Bicarbonate, mg/L	IW-4	Annually, taken in October	Monitor and Report
Boron, mg/L	IW-4	Annually, taken in October	Monitor and Report
Calcium, mg/L	IW-4	Annually, taken in October	Monitor and Report
PARAMETER	**LOCATION(S)**	**FREQUENCY**	**LIMITATIONS**
Chloride, mg/L	IW-4	Annually, taken in October	Monitor and Report

Fluoride, mg/L	IW-4	Annually, taken in October	Monitor and Report
Lithium, mg/L	IW-4	Annually, taken in October	Monitor and Report
Potassium, mg/L	IW-4	Annually, taken in October	Monitor and Report
Magnesium	IW-4	Annually, taken in October	Monitor and Report
Silica, mg/L	IW-4	Annually, taken in October	Monitor and Report
Sodium, mg/L	IW-4	Annually, taken in October	Monitor and Report
Sulfate, mg/L	IW-4	Annually, taken in October	Monitor and Report

* Sampling of IW-5 is not required unless fluid is injected to the well during the sampling period (January through June or July through December).

Sampling must occur during any six-month period (January through June or July through December) if discharge has occurred any time during that period. Sampling for the six-month period of January through June shall occur in April and sampling for July through December shall occur in October. Semi-annual reports are due by July 30th and January 31st of each year. If injection resumes to IW-5, the Permittee must notify the Division within five (5) working days and must test the injectate per Part I.A.9 at locations identified in Part I.A.8 within ninety (90) days. Results must be submitted to the Division within thirty (30) days of receiving data from a laboratory Certified by the State of Nevada.

a. Sampling for metals shall be collected unfiltered, preserved with an acid in the field and analyzed as "Total Recoverable Metals." Any exceptions to this policy must be requested and pre-approved by the UIC program prior to sampling. It must be clearly stated on all reports which analyses were used.
b. Results shall be reported in mg/L unless noted otherwise.
c. Detection limits shall be at least as low as applicable drinking water standards, or discharge limits in this permit, whichever is lower.
d. The Division may increase or decrease the monitoring of any parameter for good cause.

The following items shall be monitored by the Permittee and reported as specified in Part I.A.11:

PARAMETER	FREQUENCY AND LOCATION
a. Chemical analyses[1]	As described in Parts I.A.9.
b. Production volume, gallons	Read and record weekly at a totalizing gauge located at the production wellhead or in the production line.
c. Injection volume, gal/month and the mean, lowest and highest injection rate, gpm [1]	Read and record weekly at totalizing gauge and instantaneous gauge, located in the injection line and the injection wellhead, respectively.
d. Average, lowest and highest injection pressure, psig [1]	Read and record weekly at an instantaneous gauge located at the injection wellhead.
e. Injection temperature, degrees Fahrenheit	Read and record weekly at an instantaneous gauge located at the injection wellhead.

[1] monitoring for both IW-4 and IW-5

G. Rationale for Permit Requirements

The permit conditions will help to ensure that injected fluids do not adversely affect the existing water quality or hydrologic regime.

Prepared by: Birgit Widegren
Date: February 28, 2006